

NOTES ON MALESIAN FABACEAE
(LEGUMINOSAE–PAPILIONOIDEAE)
7. The genus *Millettia*

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SUMMARY

The genus *Millettia* Wight & Arn. is revised for the Flora Malesiana area. Two new species are described: *M. borneensis* and *M. glabra*. *Pongamia velutina* (C.T. White) Verdc. is transferred to *Millettia*; as the epitheton *velutina* is already in use in *Millettia*, a new name is proposed: *M. velvetina* Adema. In total 15 species are recognised for the area concerned. A key to the species is given. An identification list and an index of names are included.

Key words: *Millettia*, Malesia, Solomon Islands.

INTRODUCTION

Millettia was described by Wight & Arnott (1834: 263) to accommodate two new species: *M. rubiginosa* Wight & Arn. and *M. splendens* Wight & Arn. Since then many species have been added to this genus. Dunn (1912) accepted 127 species in 15 sections. Geesink (1981a, 1984) transferred several sections to other genera and united *Pongamia* Vent. with *Millettia* sect. *Fragiliflorae* (see also Adema, 2000). In Malesia two sections of *Millettia* can be found: sect. *Millettia* (= sect. *Typicae* Dunn + sect. *Macrospermae* Dunn) and sect. *Fragiliflorae* Dunn. In the following treatment the genus, both sections, and their species will be reviewed and discussed. Two new species will be described, *M. borneensis* and *M. glabra*, and one new name, *M. velvetina* Adema, is proposed. Only the new species are described in full; the other species are mentioned with full synonymy and notes. A key to all species of *Millettia* in Malesia is given; an identification list and an index of names are included.

MILLETTIA

Millettia Wight & Arn., Prod. Fl. Penins. Ind. Or. 1 (1834) 263, nom. cons.; Benth. in Miq., Pl. Jungh. (1852) 247; Baker in Hook.f., Fl. Brit. Ind. 2 (1876) 104; Taub. in Engl. & Prantl, Nat. Pflanzenfam. 3, 3 (1894) 270; Prain, J. As. Soc. Beng. 66, 2 (1897) 358; Merr., Philipp. J. Sci., Bot. 5 (1910) 70; Dunn, J. Linn. Soc. Bot. 41 (1912) 123; Gagnep., Fl. Gén. Indo-Chine 2 (1916) 361; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 278; Backer & Bakh.f., Fl. Java 1 (1964) 595; Verdc., Man. New Guinea Leg. (1979) 332; Allen & Allen, Leguminosae (1981) 435; R. Geesink in Polhill & Raven, Adv. Leg. Syst. 1 (1981) 257; Leiden Bot. Ser. 8 (1984) 102. — *Millettia* Wight & Arn. sect. *Typicae* Dunn, J. Linn. Soc. Bot. 41 (1912) 134. — Type species: *Millettia rubiginosa* Wight & Arn.

Pongamia Vent., Jard. Malm. (1803) t. 28, nom. cons.; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 298; Backer & Bakh. f., Fl. Java 1 (1964) 616; Verdc., Man. New Guinea Leg. (1979) 311; Allen & Allen, Leguminosae (1981) 543; R. Geesink in Polhill & Raven, Adv. Leg. Syst. 1 (1981) 259. — Type species: *Pongamia glabra* Vent. [= *P. pinnata* (L.) Pierre].

Galedupa Lam., Encycl. 2 (1876) 594; Taub. in Engl. & Prantl, Nat. Pflanzenfam. 3, 3 (1891) 344. — Type species: *Galedupa indica* Lam.

Millettia Wight & Arn. sect. *Fragiliflorae* Dunn, J. Linn. Soc. Bot. 41 (1912) 136. — Type species not indicated.

Millettia Wight & Arn. sect. *Macrospermae* Dunn, J. Linn. Soc. Bot. 41 (1912) 136. — Type species not indicated.

Trees, shrubs, or lianas. *Leaves* imparipinnate, rarely pinnately trifoliolate; stipules present, caducous; stipellae present or absent. *Leaflets* entire, lateral ones opposite. *Inflorescences* axillary and/or terminal, panicles, racemes, pseudoracemes or pseudopanicles; in sect. *Fragiliflorae* with a pulvinus at the base; flowers fascicled or not. *Bracts* present, usually caducous; bracteoles present, usually caducous. *Calyx* campanulate or ± tubular, teeth inconspicuous or up to slightly longer than the tube. *Corolla*: standard with or without basal callosities, rarely with auricles; wings adhering to the keel petals; keel petals slightly shorter than the wings, usually with a lateral pocket. *Stamens* mono- or diadelphous, in the former case with basal fenestrae; anthers basifixed, in sect. *Fragiliflorae* hairy. *Disc* inconspicuous to annular or 10-lobed and adnate to the hypanthium. *Ovary* subsessile to stipitate, with 2 (or 3) to several ovules; style almost glabrous, or hairy in lower half and glabrous upwards. *Pods* strap-shaped to ellipsoid or semi-circular, compressed or not, dehiscent, rarely indehiscent or tardily dehiscent. *Seeds* transversely ellipsoid to 'quadrate' or ± oblong.

Distribution — More than 100 species in the tropics of Africa and Asia into the Pacific; in Malesia c. 15 species.

Note — Root nodules have been reported for *M. pinnata* and several African species (Allen & Allen, 1981).

KEY TO THE SECTIONS OF MILLETTIA IN MALESIA

- 1a. Axillary buds button-shaped, tightly enclosed by the bud scales. Inflorescences with a pulvinus at the base of the peduncle. Standard with two basal callosities. Anthers hairy **sect. *Fragiliflorae***
- b. Axillary buds flattened ovoid to globular, loosely enclosed by the bud scales. Inflorescences without a pulvinus at the base of the peduncle. Standard without callosities. Anthers glabrous **sect. *Millettia***

Section *Millettia*

Section *Millettia*. — Section *Typicae* Dunn, J. Linn. Soc. Bot. 41 (1912) 134, nom. illeg. — Type: *Millettia rubiginosa* Wight & Arn.

Section *Macrospermae* Dunn, J. Linn. Soc. Bot. 41 (1912) 136. — Lectotype (here designated): *Millettia sericea* Benth.

Trees, shrubs, or lianas. *Axillary buds* flattened ovoid to globular, loosely enclosed by the bud scales. *Inflorescences* axillary or terminal pseudoracemes or pseudopanicles, no pulvinus at the base of the peduncle. *Standard* without callosities. *Anthers* glabrous, very rarely with some hairs.

Distribution — SE Asia from India and Sri Lanka to S China, Indochina, Thailand and W Malesia.

Note — The only difference between Dunn's sections '*Typicae*' (= *Millettia*) and *Macrospermæ* is the presence or absence of stipellae. As this is an unimportant difference in other sections of *Millettia*, the two sections should be united.

In Malesia four species belong to this section:

1. *Millettia chrysamaryssa* Adema — Fig. 1a

Millettia chrysamaryssa Adema, Novon 9 (1999) 289. — Type: Maxwell 78-107 (AA, L, SINU), Malaysia, Perak, Padang, Selim River, 12.4.1978.

Note — This new species was, rather surprisingly, found in the material identified as *M. sericea* by earlier botanists. *Millettia chrysamaryssa* differs mainly from *M. sericea* in the size of the stipules (5 by 3 mm vs. 2–3.5 by 2–3 mm), the size of the anthers (0.7–1.1 by 0.4–0.6 mm vs. 0.6–0.7 by 0.4–0.6 mm), the pods (flattened, 14 by 5 by 0.4 cm vs. thickened, 5–7.5 by 1.5–3.5 by 1–2 cm) and the seeds (flattened, upright-oblong, 24 by 16 by 2 mm vs. thickened, transverse-ellipsoid, 25–45 by 10–25 by 4–13 mm). See for a full account Adema, 1999.

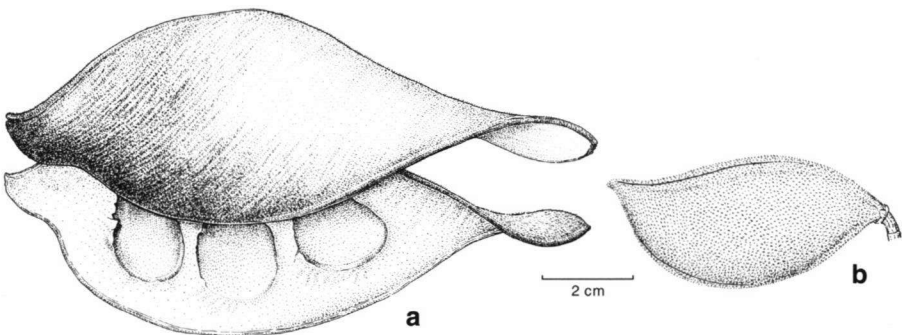


Fig. 1. *Millettia* Wight & Arn. sect. *Millettia*. Pods. a. *M. chrysamaryssa* Adema; b. *M. sericea* (Vent.) Wight & Arn. ex Hassk. (a: Maxwell 78-107; b: King's coll. 709).

2. *Millettia galliflagrans* Whitmore

Millettia galliflagrans Whitmore, Fed. Mus. J. 13 (1970) 136; Tree Fl. Mal. 1 (1972) 297. — Type: FRI 7551 (P.F. Cockburn), Malaysia, Johore, Kluang F.R., at foot of G. Blumut (n.v.).

Note — A rather enigmatic species. It is a small tree with unifoliolate leaves. Up to now only known from the type specimen, which I have not seen as yet. The specimen FRI 17804 (*T. Suppiah*) may belong to this species.

3. *Millettia sericea* (Vent.) Wight & Arn. ex Hassk. — Fig. 1b

Millettia sericea (Vent.) Wight & Arn. ex Hassk., Cat. Hort. Bogor. (1844) 283; Benth. in Miq., Pl. Jungh. (1852) 248; Miq., Fl. Ned. Ind. 1 (1855) 153; Prain, J. As. Soc. Beng. 66, 2 (1897) 88; Dunn, J. Linn. Soc. Bot. 41 (1912) 169; Gagnep., Fl. Gén. Indo-Chine 2 (1916) 383; K. Heyne,

- Nutt. Pl. 2 (1916) 280; Ridl., Fl. Mal. Penins. 1 (1922) 584; Craib, Fl. Siam. Enum. 1 (1928) 394; Burkill, Dict. 2 (1935) 1472; Backer & Bakh.f., Fl. Java 1 (1964) 596; Whitmore, Tree Fl. Mal. 1 (1972) 298. — *Pongamia sericea* Vent., Jard. Malm. (1803) t. 28. — Type: *De Lahaye s.n.* (P?, Herb. Jussieu?), Java (n.v.).
- Dalbergia angustifolia* Hassk., Cat. Hort. Bogor (1844) 284. — Type unknown.
- Millettia sericea* (Vent.) Wight & Arn. ex Hassk. var. *obtusa* Miq., Fl. Ned. Ind. 1 (1855) 154. — Type: *Blume s.n.* [holo L (L 908.120-305)], Java.
- Millettia sericea* (Vent.) Wight & Arn. ex Hassk. forma *subcordata* Miq., Fl. Ned. Ind. 1 (1855) 154. — Type: *Blume s.n.* [holo L (L 908.120-311)], Moluccas.
- Millettia sericea* (Vent.) Wight & Arn. ex Hassk. forma *brachycarpa* Miq., Fl. Ned. Ind. 1 (1855) 154. — Type: *Blume s.n.* [holo L (L 908.120-317)], Sumatra.
- Millettia argentea* Zipp. ex Miq., Fl. Ned. Ind. 1 (1855) 156. — Lectotype (here designated): *Zippelius s.n.*, Java [holo L (L 908.120-407)].
- Millettia sericea* (Vent.) Wight & Arn. ex Hassk. var. *major* Miq., Fl. Ned. Ind., Eerste bijv., Sumatra (1861) 300. — Type: *Teijsmann s.n.*, Sumatra (K).
- Millettia sericea* (Vent.) Wight & Arn. ex Hassk. var. *aurata* Miq., Fl. Ned. Ind., Eerste bijv., Sumatra (1861) 300. — Type: *Teijsmann s.n.*, Sumatra (n.v.).
- Millettia turgida* Miq., Fl. Ned. Ind., Eerste bijv., Sumatra (1861) 300. — Type: *Diepenhorst s.n.*, Sumatra (n.v.).
- Millettia sericea* (Vent.) Wight & Arn. ex Hassk. var. *malaccensis* Prain, J. As. Soc. Beng. 66, 2 (1897) 88. — Syntypes: *Griffith 1764* (K), *Maingay 518* (A, K, L), *Goodenough 1706* (n.v.), Malaysia.

Notes — 1. *Stone 15598* from Malaysia has rather small, thick leaflets, but is not different in other characters. *Lörzing 6809* from Sumatra is in some aspects quite similar to *M. chrysamaryssa*; however, the pods of this specimen clearly belong to *M. sericea*.

2. Several specimens from Java have \pm obtuse or rounded leaflets ('var. *obtusa* Miq.'). The fruits of these specimens appear rather well developed (size: 50–55 by 18–19 by 5–10 mm). However, the seeds are flat or indented and are probably not viable. No differences could be found in other characters. These specimens are included in *M. sericea*.

3. The type of *M. sericea* forma *subcordata* Miq. is given as collected by Zippelius in New Guinea or in the Moluccas. However, this specimen was probably collected by Blume in Java.

4. A specimen with a Korthals label (*Korthals s.n.*, A) gives Borneo as the locality. The specimen was probably collected in Sumatra as were most of Korthals' specimens of *M. sericea*.

5. 'Var. *malaccensis* Prain': Of the syntypes *Griffith 1764* (K) and *Maingay 518* (A, K, L) were seen. *Maingay 518* is a mixed collection: duplicates at Kew belong to *M. sericea*; however, one sheet also bears the annotation '1184B, Feb 6 1868, Malacca'. Another sheet is also numbered *Maingay 1184*, and a third sheet also *Maingay 1182*. The Leiden and Harvard sheets belong to *M. chrysamaryssa*, of which the Leiden sheet also bears the label *Maingay 508*. No lectotype has been chosen.

4. *Millettia solomonensis* Verdc.

- Millettia solomonensis* Verdc., Kew Bull. 32 (1977) 247; Man. New Guinea Leg. (1979) 332. — Type: *Schodde & Craven 3805* (holo K; iso A, BRI, CANB, L, LAE), Papua New Guinea, Bougainville.

Notes — 1. Verdcourt (1977) refrained from including this species in one of the sections of *Millettia*. The absence of callosities, the large fruits and seeds indicate that *M. solomonensis* belongs to sect. *Millettia*. In inflorescence and flower characters it is quite similar to *M. chrysamaryssa* and *M. sericea*.

2. The descriptions of the fruits and seeds have been copied from Verdcourt (1977).

3. There are several small differences between the specimens. Much more material is needed to see if there is more than one taxon involved. *NGF 31614* is described as an 8 ft high shrub, it also differs in leaves and fruits. *NGF 13393* is described as a shrub with deep purple-red flowers (Verdcourt, 1977).

Section *Fragiliflorae*

Section *Fragiliflorae* Dunn, J. Linn. Soc. Bot. 41 (1912) 136; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 298; Backer & Bakh.f., Fl. Java 1 (1964) 616; Verdc., Man. New Guinea Leg. (1979) 311; Allen & Allen, Leguminosae (1981) 543; R. Geesink in Polhill & Raven, Adv. Leg. Syst. 1 (1981) 258; Leiden Bot. Ser. 8 (1984) 103. — Lectotype (here designated): *Millettia merrillii* Perkins.

Pongamia Vent., Jard. Malm. (1803) t. 28. — Type: *Pongamia glabra* Vent., nom. illeg. [= *Pongamia pinnata* (L.) Pierre = *Millettia pinnata* (L.) Panigrahi].

Trees. *Axillary buds* button-shaped tightly enclosed in the bud scales. *Inflorescences* axillary, pseudoracemes with a pulvinus at the base of the peduncle. *Standard* with 2 large basal callosities. *Anthers* hairy (at least some hairs at the base).

Distribution — Tropical Asia, throughout Malesia; Pacific Islands, Australia, Mascarene Islands.

Note — *Millettia* is conserved over *Pongamia* (Geesink, 1981b; Brummitt, 1984); however, *Pongamia* has retained its status as conserved name (Brummitt, 1984).

The section *Fragiliflorae* can be divided into two groups: A: *Pinnata*-group: Ovules 2 (rarely 1 or 3); pods rather thick, tardily dehiscent to indehiscent; seeds usually 1, rather large and thick. B: *Merrillii/Xylocarpa*-group: Ovules 3–10 (rarely 2); pods flattened, dehiscent; seeds 3 or more (rarely less), usually small, flattened.

A. *PINNATA*-GROUP

This group consists of 3 species: the new species *Millettia borneensis*, and *M. brachycarpa* and *M. pinnata*.

5. *Millettia borneensis* Adema, spec. nov. — Fig. 2a, b, 3a

Arbor. Folia imparipinnata (5- vel) 7-foliolata. Foliola elliptica ad obovata breviter acuminate infra sericea ad fere glabra. Pseudo-racemi axillares pedunculo basi pulvinato. Ovula 2 (vel 3). Legumina plerumque 1-seminalis indehiscentia circum semen tumescentia. — Typus: *S 27606* (Soepadmo & Smith) (holo L; iso A, K), Borneo, Sarawak, Bukit Raya, 1.4.1969.

Trees or shrubs, 4–50 m high, dbh 7–80 cm. *Bark* grey, inner bark white or pale yellow, wood white to ochre. *Twigs* terete, 3–4 mm diam., thinly hirsute to glabrous. *Stipules* obliquely elliptic, c. 4.5 by 2 mm, caducous, outside sericeous, inside sericeous at base. *Leaves* (5- or) 7-foliolate. *Petiole* 3–5 cm long, striate, thinly hirsute to gla-

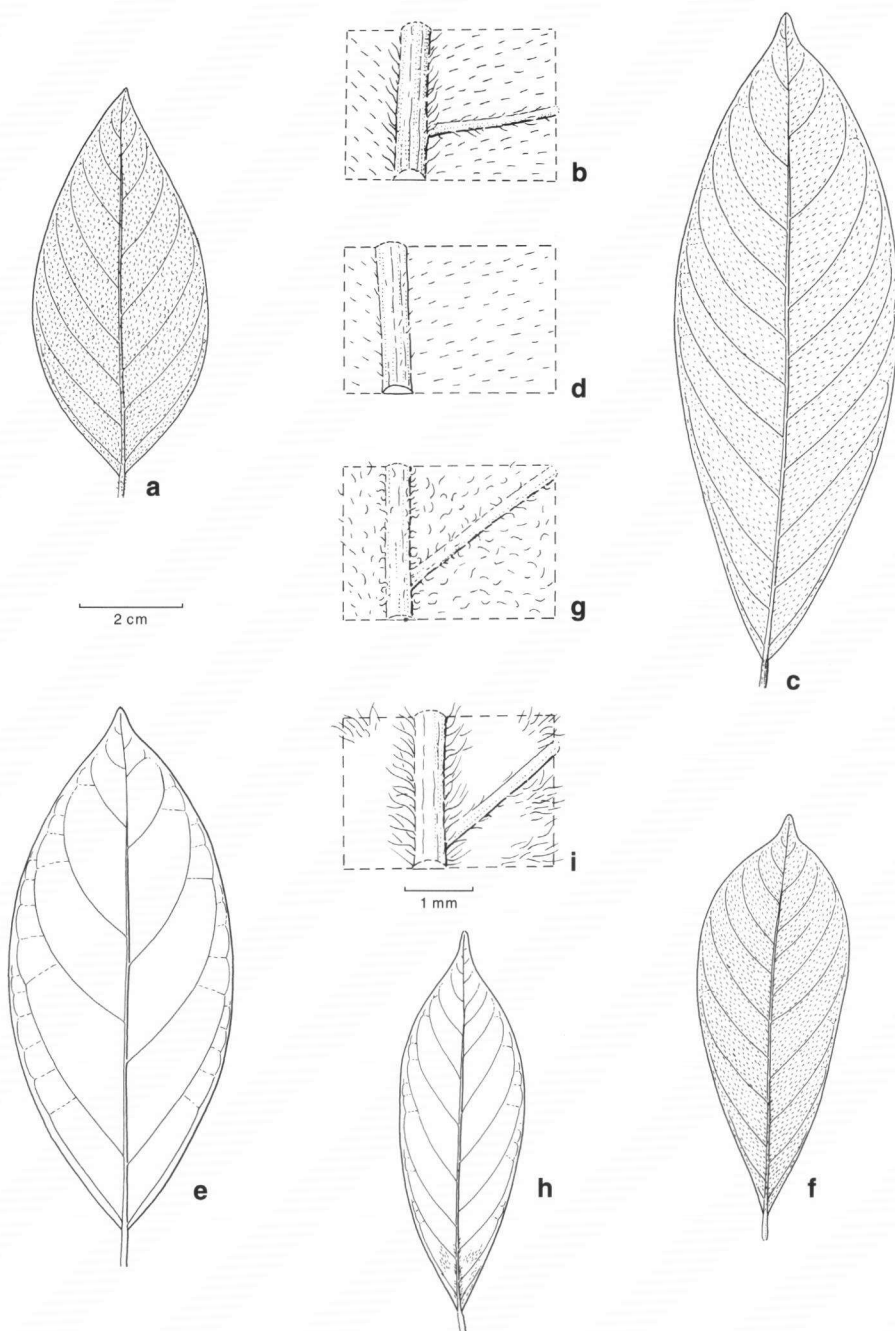


Fig. 2. *Millettia* Wight & Arn. sect. *Fragiliflorae* Dunn. Leaflets from below. a, b. *M. borneensis* Adema; c, d. *M. brachycarpa* Merr.; e. *M. pinnata* (L.) Panigrahi; f, g. *M. velvetina* Adema; h, i. *M. xylocarpa* Miq. (a, b: SAN 25299; c, d: SMHI 1560; e: SAN 25767; f, g: NGF 10747; h, i: KEP 98642).

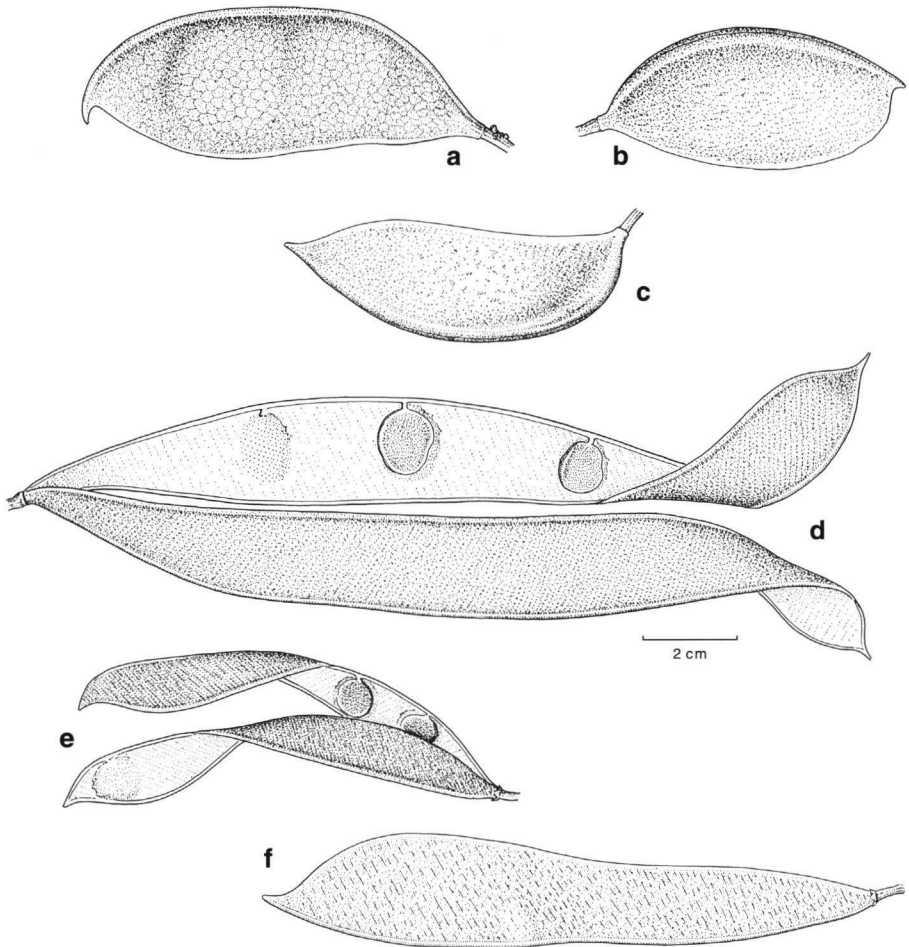


Fig. 3. *Millettia* Wight & Arn. sect. *Fragiliflorae* Dunn. Pods. a. *M. borneensis* Adema; b. *M. brachycarpa* Merr.; c. *M. pinnata* (L.) Panigrahi; d. *M. ahernii* Merr. & Rolfe; e. *M. merrillii* Perkins; f. *M. xylocarpa* Miq. (a: SAN 60019; b: SMHI 363; c: Nbfd 9455; d: PNH 11130; e: Ridsdale & Reynoso 1917; f: FRI 32637).

brous; rachis 6.5–10.5 cm long, striate, thinly hirsute to glabrous; pulvinus 5–7 mm long. *Leaflets*: terminal elliptic to obovate, 7–11.5 by 3–5 cm, index 2.2–2.7, \pm papyraceous, often rolled upwards when dry, base cuneate, apex (shortly) acuminate, acumen 4–9 mm long, both surfaces (thinly) sericeous, rarely more hirsute, midrib and nerves flat or slightly sunken above, nerves 8 or 9 per side, 5–13 mm apart; lateral mostly as the terminal, 3.5–9 by 2–3.5 cm, index 1.4–3.3, acumen 1–9 mm long; pulvinus 4–6 mm long. *Inflorescences* 3–16 cm long, thinly hirsute to glabrous; peduncle 3–6 cm long, thinly hirsute to glabrous; pulvinus 3–5 mm long. *Bracts* to the brachyblasts narrowly triangular, c. 3 by 0.7 mm, outside hirsute, inside sericeous. *Brachyblasts* (1- or) 2-flowered. *Bracts* to the flowers \pm ovate, 0.6–0.8 by 0.4–0.5 mm, outside

sericeous, inside sericeous or glabrous. *Pedicels* c. 5 mm long. *Bracteoles* at top of pedicel, elliptic to ovate, 0.4–0.6 by 0.2–0.4 mm, outside sericeous, inside sericeous or glabrous. *Calyx* c. 4 mm long, outside sericeous to hirsute, inside glabrous; lobes 5, inconspicuous. *Corolla* (light) purplish, standard green at base. *Standard*: claw 2–3 mm long; blade \pm orbicular, 9.5–10 by 10 mm, retuse, outside sericeous, glabrous towards the base and margin, inside glabrous. *Wings*: claw c. 3 mm long; blade elliptic or 'axe-shaped', c. 8 by 3.5 mm, outside and inside sericeous at apex, auricles inconspicuous. *Keel petals*: claw 3–3.5 mm; blade \pm boat-shaped, 6.5–7 by 3 mm, outside sericeous on ventral side, inside sericeous along ventral margin at least in upper part, lateral pocket c. 2 mm long, rather wide, auricles upright, above lateral pocket, c. 1 mm high. *Stamens* c. 10 mm long, with basal fenestrae, free part 1.5–3.5 mm long, glabrous; anthers 0.6–1.0 by 0.5–0.6 mm, with some hairs at the base. *Disc* annular or almost absent, up to 0.1 mm high. *Ovary* 3.5–4 mm long, hirsute or sericeous; stipe 1.5–2 mm long; ovules 2 (or 3); style 5–6 mm long, sericeous in lower part, upwards glabrous; stigma terminal, capitate. *Pods* green, flattened to inflated, \pm sharp-edged, bulging around the seed, oblong to half-moon-shaped, 5.5–8.5 by 2–3.5 by 0.3–1.2 cm, stipe c. 2 mm long, valves c. 1.7 mm thick, outside glabrous or with some hairs. *Seeds* discoid to transversely ellipsoid, 18–20 by 15–16 by 4–8 mm, hilum 1–1.5 mm long.

Distribution — Sumatra, Peninsular Malaysia, Singapore, Borneo.

Habitat & Ecology — (Disturbed) primary forest, swamp forest, along rivers. Soil: sand or limestone. Altitude up to 100 m. Flowering: March to June, October, November. Fruiting: April to November.

Notes — 1. Very flat pods do not contain ripe seeds, the undeveloped seeds are filled with up to 5 developing insects.

2. This new species is in several aspects rather similar to *M. pinnata*. It differs especially in the more dense indumentum, the narrower and usually thinner leaflets that often curl upwards in drying, the smaller flowers and the sharp-edged pods with smaller, thinner seeds. As in *M. pinnata* the pods are probably tardily dehiscent. In this character they differ from most other species of section *Fragiliflorae*.

3. Two specimens from Peninsular Malaysia are recorded with (pale) orange flowers.

4. Specimens from Peninsular Malaysia, Singapore and Sumatra differ in indumentum from the Bornean specimens. In the first group the lower surfaces of the leaflets are (very) thinly sericeous to \pm hirsute with the hairs tending to become patent. The Bornean specimens are sericeous on the lower surface of the leaflets with the hairs appressed. Otherwise there seem to be no differences; however, all plants from the first group seen so far are in flower and pods are really needed for a final decision. For the present these plants have been included here.

6. *Millettia brachycarpa* Merr. — Fig. 2c, d, 3b

Millettia brachycarpa Merr., Philipp. J. Sci., Bot. 10 (1915) 17; Enum. Philipp. Flow. Pl. 2 (1923) 278. — Type: BS 9578 (A, K, L), Philippines, Palawan.

Notes — 1. This species is a Philippine endemic. Only found in Luzon and Palawan.

2. Red exudate has been observed in several specimens.

3. Inflorescences of BS 29185 are sometimes once branched.

7. *Millettia pinnata* (L.) Panigrahi — Fig. 2e, 3c

Millettia pinnata (L.) Panigrahi in Panigrahi & Murti, Fl. Bilaspur Distr. 1 (1989) 210. — *Cytisus pinnatus* L., Sp. Pl. (1753) 741. — *Pongamia pinnata* (L.) Pierre, Fl. For. Coch. 5 (1907) t. 384; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 298; Craib, Fl. Siam. Enum. 1 (1928) 494; Backer & Bakh.f., Fl. Java 1 (1964) 616; Whitmore, Tree Fl. Mal. 1 (1972) 303; Verdc., Man. New Guinea Leg. (1979) 312. — *Pongamia pinnata* (L.) Merr., Interpr. Rumph. Herb. Amboin. (1917) 271. — Type: Pluk., Phyt. (1690) 104, f. 3.

[*Malaparius* Rumph., Herb. Ambon. 3 (1743) 183, t. 117.]

[*Malaparius e Nussanive* Rumph., Herb. Ambon. 5 (1747) 184.]

Robinia mitis L., Sp. Pl. ed. 2 (1763) 1044, nom. illeg. — *Pongamia mitis* (L.) Kurz, Prelim. Rep. For. Veg. Pegu, App. A (1875) 49. — *Pongamia mitis* (L.) Merr., Philipp. J. Sci., Bot. 5 (1910) 101. — Type unknown.

Pongamia glabra Vent., Jard. Malm. (1803) t. 28, nom. illeg.; Descaisne, Herb. Timor. (1835) 448; Miq., Fl. Ned. Ind. 1 (1855) 147; K. Heyne, Nutt. Pl. 2 (1916) 306; Gagnep., Fl. Gén. Indo-Chine 2 (1916) 441; Ridl., Fl. Mal. Penins. 1 (1922) 593; Burkill, Dict. 2 (1935) 1797. — Type unknown.

Pongamia xerocarpa Hassk., Hort. Bogor. descr., ed. 2 (1858) 208. — *Pongamia mitis* (L.) Merr. var. *xerocarpa* (Hassk.) Merr., Philipp. J. Sci., Bot. 5 (1910) 101. — *Pongamia pinnata* (L.) Merr. var. *xerocarpa* (Hassk.) Merr., Enum. Philipp. Flow. Pl. 2 (1923) 298. — Type unknown.

Pongamia grandifolia Zoll. & Moritzi in Moritzi, Syst. Verz. (1845) 2; Hassk., Hort. Bogor. descr., ed. 2 (1858) 210. — Type: *Zollinger 1245* (n.v.).

Millettia novoguineensis Kaneh. & Hatus., Bot. Mag. (Tokyo) 56 (1942) 567. — Type: *Kanehira & Hatusima 12587* (A), Dutch New Guinea, Sennen, 40 km inward from Nabire, 8.3.1940.

Notes — 1. This well-known widespread species really belongs to *Millettia* sect. *Fragiliflorae*. See Geesink, 1981a, b and Adema, 2000.

2. Very variable, especially in New Guinea. The species varies greatly in shape, size, and indumentum of leaflets; there are often also small differences in the size of the petals and the indumentum of the keel petals. One group of New Guinean specimens (*Kostermans & Soegeng 975*, *LAE 50088*, *McDonald & Ismail 3706*, *NGF 39315*) has much smaller fruits with wrinkled walls. Further field studies may show the existence of more taxa.

3. I observed dark (red) sap in stems and pod walls.

Uses — The hard wood is used for temporary housing constructions. Twigs and small branches are used as toothbrush. Leaves are used in local medicine.

B. MERRILLII / XYLOCARPA-GROUP

In Malesia this group consists of 7 species of which *M. glabra* is described as new.

8. *Millettia ahernii* Merr. & Rolfe — Fig. 3d

Millettia ahernii Merr. & Rolfe, Philipp. J. Sci., Bot. 3 (1908) 103; Merr., Philipp. J. Sci., Bot. 5 (1910) 71; Dunn, J. Linn. Soc. Bot. 41 (1912) 181; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 278. — Type: *BS 3373 (Ahern's collector)* (K), Philippines, Luzon.

Millettia canariifolia Merr., Philipp. J. Sci., Bot. 5 (1910) 71; Dunn, J. Linn. Soc. Bot. 41 (1912) 178; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 279. — Syntypes: *BS 4711* (n.v.), 4727 (K).

Millettia cavitensis Merr., Philipp. J. Sci., Bot. 5 (1910) 72; Dunn, J. Linn. Soc. Bot. 41 (1912) 179; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 279. — Type: *Merrill 4181* (L, P), Philippines, Luzon.

Notes — 1. Rather similar to *M. merrillii* but larger in size of leaflets and fruits with only a slight overlap. Also similar to *M. tenuipes* which differs in the length of the pedicels and the slightly larger flowers.

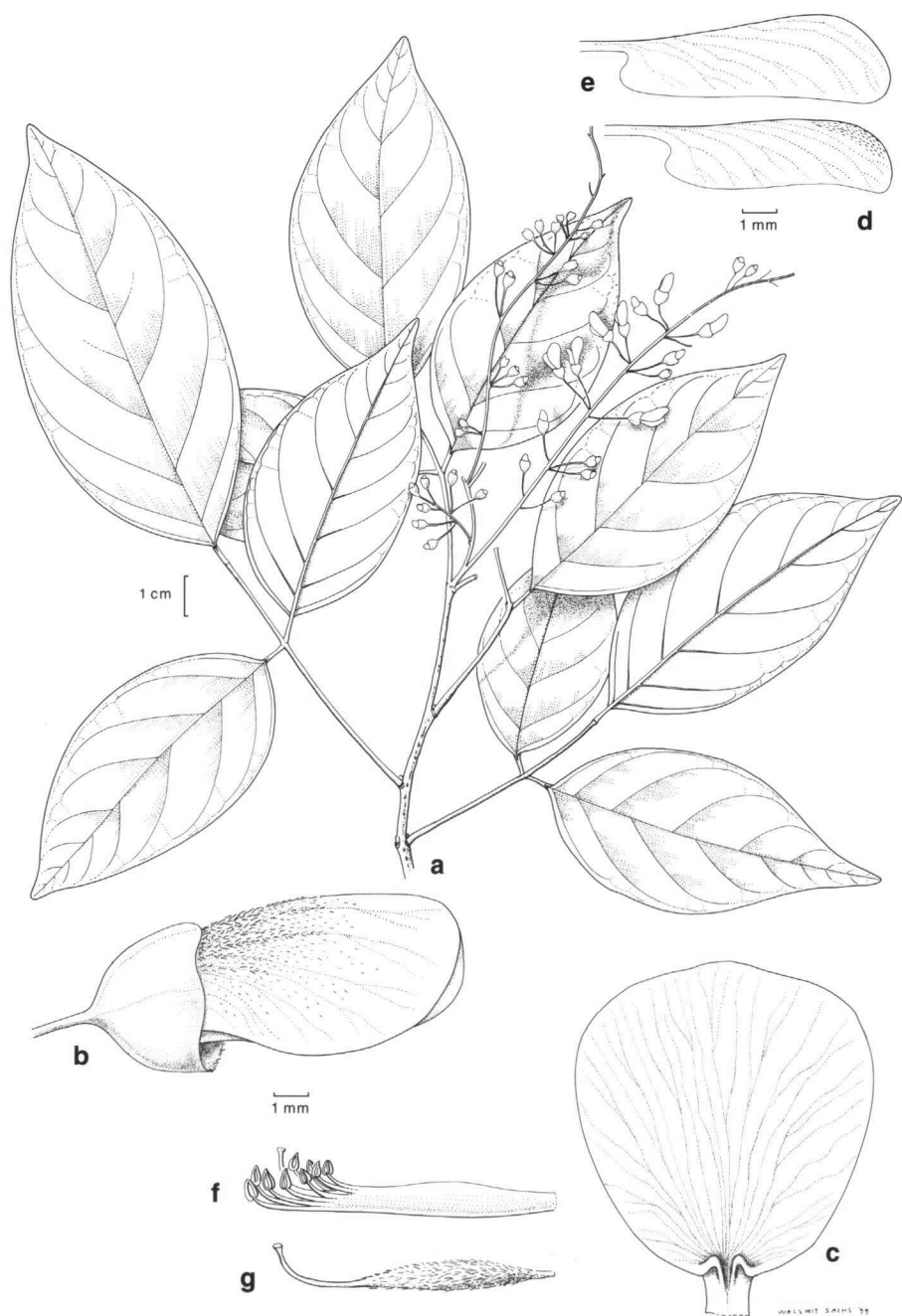


Fig. 4. *Millettia glabra* Adema. a. Habit; b. flower; c. standard from inside; d. wing from outside; e. keel petal from outside; f. staminal tube; g. pistil (all *De Vogel 4488*).

2. Of the syntypes of *M. canariifolia* only fragments of BS 4727 were seen. These do not differ much from *M. ahernii* as understood here.

3. *Soejarto & Reynoso 6297* is included here. However, this specimen differs in some aspects: leaflets more coriaceous and more obtuse, lowest ones \pm cordate; pods smaller (but probably underdeveloped as the seeds are not fully grown).

4. *Alston 16740* from Halmahera (Moluccas) may belong here. The only difference is the size of the leaflets (terminal: 17 by 8.5 cm, lateral: 15 by 7 cm).

9. *Millettia glabra* Adema, *spec. nov.* — Fig. 4

Arbuscula ad 3 m alta. Folia 3-foliolata. Foliola (late) elliptica, acumine 8–27 mm longo, utrinque glabra. Calyx utrinque glaber, dentium inconspicuum margo pilis paucis brevibus. Corolla *M. pinnatae* similis sed plurimum partium minor. Ovula 4 vel 5. — Typus: *De Vogel 4488* (holo L), Moluccas, Halmahera.

Treelet, up to 3 m high. *Twigs* terete, 3–10 mm diam., glabrous. *Stipules* caducous. *Leaves* 3-foliolate. *Petiole* 2–5 cm long, \pm smooth, glabrous; rachis 1.5–3.5 cm long, \pm smooth, glabrous; pulvinus 2–5 mm long. *Leaflets*: terminal (broadly) elliptic, 7.5–21 by 3–9 cm, index 1.8–2.3, base cuneate, apex acuminate, acumen 8–27 mm long, both sides glabrous, midrib and nerves \pm sunken above, nerves 4–6 per side, 9–40 mm apart; lateral mostly as the terminal, elliptic to ovate, 5.5–12.5 by 2–6 cm, index 1.6–3; pulvinus 4–7 mm long. *Inflorescences* 1.5–10 cm long, glabrous; peduncle 2–4 cm long, glabrous; pulvinus c. 1 mm long, rather inconspicuous. *Bracts* \pm linear, c. 2.5 by 1 mm, outside sericeous, inside glabrous. *Pedicels* 5–7 mm long. *Bracteoles* elliptic to triangular, 0.20–0.25 by 0.1–0.3 mm, outside sericeous, inside glabrous. *Calyx* c. 4 mm long, teeth inconspicuous, both sides glabrous, rim with some short hairs. *Corolla* white tinged violet, standard with greenish base. *Standard*: claw 1–2.5 mm long; blade orbicular, emarginate, 8–12 by 9–11 mm, outside sericeous, glabrous towards the side and base, inside glabrous. *Wings*: claw 2.5–3 mm long; blade elliptic, 7.5–9.5 by 3 mm, outside with some hairs at apex, inside glabrous, auricles up to 0.5 mm long. *Keel petals*: claw c. 3 mm long; blade 'boat-shaped', 6.5–8.5 by 3 mm, outside and inside sericeous along ventral side, lateral pocket 2–3 mm long, auricles inconspicuous. *Stamens* 10–13 mm long, free part 2–3 mm long, glabrous; anthers 0.6 by 0.2–0.5 mm, with some hairs especially at the base. *Disc* annular, inconspicuous. *Ovary* 5–6 mm long, sericeous; stipe c. 1 mm long; ovules 4 or 5; style 4–6 mm long, with few hairs at the base, glabrous. Pods and seeds unknown.

Distribution — Moluccas (Halmahera).

Habitat & Ecology — Dense primary or open disturbed forest. Soil: clayey or sandy with eroded lumps of limestone. Altitude up to 100 m. Flowering: Sept., Dec.

Note — Very similar to *M. pinnata*, differing in the number of leaflets (3), the almost totally glabrous calyx, and the number of ovules (4 or 5). The only Asian species of *Millettia* described with 3 leaflets is *M. trifoliata* Dunn from Burma. This species belongs to the section *Podocarpae* and differs greatly in various characters.

10. *Millettia merrillii* Perkins — Fig. 3e

Millettia merrillii Perkins, *Fragm. Fl. Philipp.* (1904) 81; Dunn, *J. Linn. Soc. Bot.* 41 (1912) 180; Merr., *Enum. Philipp. Flow. Pl.* 2 (1923) 279. — Lectotype (here designated): *Merrill 1387* (A, K), Philippines, Luzon.

Millettia foxworthii Merr., Philipp. J. Sci., Bot. 5 (1910) 72; Dunn, J. Linn. Soc. Bot. 41 (1912) 179; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 179. — Type: *BS 740 (Foxworthy)* (A, K, L), Philippines.

Millettia capillipes Dunn, Philipp. J. Sci., Bot. 6 (1912) 316; J. Linn. Soc. Bot. 41 (1912) 180. — Type: *FB 18549* (K), Philippines, Luzon.

Notes — 1. Of the syntypes (*Merrill 1387, 1625; Warburg 12578, 12891*) I have seen only *Merrill 1387* (A, K). This specimen was chosen as the lectotype.

2. Of the type of *M. capillipes* I have seen fragments in K. These do not deviate from other specimens of *M. merrillii*.

3. Several specimens (*Adduru 181, BS 76897*) have longer, narrower leaflets.

11. *Millettia platyphylla* Merr. ex Dunn

Millettia platyphylla Merr. ex Dunn, J. Linn. Soc. Bot. 41 (1912) 140; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 279. — Lectotype (here designated): *C.M. Weber 1123* (A, K, PNH?), Philippines, Mindanao.

Notes — 1. This species is a Philippine endemic collected in the islands Surigao, Leyte, Samar, and Mindanao.

2. The pod of this species is still unknown.

12. *Millettia pterocarpa* Dunn

Millettia pterocarpa Dunn, J. Linn. Soc. Bot. 41 (1912) 175. — Lectotype (here designated): *Wray 168* (K), Malaysia, Perak.

Millettia glaucescens auct. non Kurz: Prain, J. As. Soc. Beng. 66, 2 (1897) 362.

Notes — 1. Only known from Peninsular Malaysia: Perak.

2. As far as the scanty material permits me to observe, this species seems to be different from other *Millettia* species with winged fruits.

3. The wings on the pods of this and similar winged *Millettia* species are orientated differently than in winged species of the *Derris*-group. In *Millettia* wings on the fruit are perpendicular to the valves of the pod; in the *Derris*-group they are \pm parallel to the valves of the pod as an erect continuation of the sutures.

13. *Millettia tenuipes* Merr.

Millettia tenuipes Merr., Philipp. J. Sci. 30 (1926) 398. — Type: *BS 44803 (Ramos & Edaña)* (A, K, PNH?, SING), Philippines, Luzon.

Note — Only known from the type, a flowering specimen. In many aspects rather similar to *M. ahernii* but different in the length of the pedicels, the slightly larger flowers and the longer anthers.

14. *Millettia velvetina* Adema, *nom. nov.*

Pongamia pinnata (L.) Pierre var. *velutina* C. T. White, J. Arnold Arbor. 10 (1929) 222. — *Pongamia velutina* (C. T. White) Verdc., Kew Bull. 32 (1977) 250; Man. New Guinea Leg. (1979) 312. — Type: *Brass 841* (A, BRI, K), Papua New Guinea. (Non: *Millettia velutina* Dunn, 1912.)

Note — The epitheton *velutina* was already used by Dunn (1912: 149) for a Chinese species.

15. *Millettia xylocarpa* Miq. — Fig. 3f

Millettia xylocarpa Miq., Fl. Ned. Ind. 1 (1855) 157; Dunn, J. Linn. Soc. Bot. 41 (1912) 239; Backer & Bakh.f., Fl. Java 1 (1964) 595. — Type: *Horsfield s.n. (Leg. 188)* (K), Java, Soerabaja.
Millettia pubinervis Kurz, J. As. Soc. Beng. 42, 2 (1873) 68; Dunn, J. Linn. Soc. Bot. 41 (1912) 177; Gagnep., Fl. Gén. Indo-Chine 2 (1916) 378. — Type: *Kurz 1778*, Burma (n.v.).
Pongamia dehiscens Koord. & Valetton, Bijdr. Booms. Java 2 (1895) 96. — *Millettia dehiscens* (Koord. & Valetton) Prain, J. As. Soc. Beng. 66, 2 (1897) 360; Dunn, J. Linn. Soc. Bot. 41 (1912) 172. — Lectotype (here designated): *Koorders 4105* (holo L; iso BO, K, L).
Millettia decipiens Prain, J. As. Soc. Beng. 66, 2 (1897) 90, 360; Dunn, J. Linn. Soc. Bot. 41 (1912) 172; Ridl., Fl. Mal. Penins. 1 (1922) 585; Whitmore, Tree Fl. Mal. 1 (1972) 297. — Type: *Scortechini 1747* (holo K; iso A, K), Peninsular Malaysia.
Millettia hemsleyana Prain, J. As. Soc. Beng. 66, 2 (1897) 90, 360; Dunn, J. Linn. Soc. Bot. 41 (1912) 585; Craib, Fl. Siam. Enum. 1 (1928) 390; Burkill, Dict. 2 (1935) 1472; Whitmore, Tree Fl. Mal. 1 (1972) 297. — Lectotype (Dunn, 1912): *Wray 3310* (K), Malaysia, Perak, Polo Kamiri.

Notes — 1. Young twigs and leaves are rather densely hirsute; however, because of the looseness of the hairs most parts are soon more or less glabrous.

2. *Millettia hemsleyana* and *M. decipiens* differ according to Dunn (1912, in the key) and Whitmore (1972) only in the hairiness of the flower parts: the former more or less glabrous, the latter 'hairy'. Dunn, however, in his descriptions gives *M. decipiens* as 'sparse pubescent'. The only difference between *M. hemsleyana* and *M. pubinervis* is, according to Dunn, the persistence of the stipules: in the former until anthesis, in the latter early caducous. The hairiness in the corolla parts seems to be variable; already Dunn describes the three species as follows: *M. hemsleyana*: 'glabra', *M. decipiens*: 'sparse pubescence' (in the key, however, 'ubiquum sericeum'), *M. pubinervis*: 'pubescens' (in the key, however, 'plerumque glabrum'). The persistence of the stipules also seems to vary as in specimens with \pm persistent stipules, the stipules are not persistent in all leaves. Both characters cannot be checked in fruiting material. As the differences are small and overlapping the species are united here. The type of *M. decipiens* Prain has slightly smaller flowers.

3. The differences between *M. dehiscens* and *M. pubinervis* are slight. The syntypes (and only known material) of the former have longer pedicels than *M. pubinervis*: *M. dehiscens* 10–13 mm; *M. pubinervis* 3.5–7 mm. They also differ in shape of the bracts to the flowers: *M. dehiscens* triangular, *M. pubinervis* elliptic to ovate. I think that these differences are too small to keep the species separate.

4. Although Prain (1897) gives *Scortechini 1749* for the collection chosen as the lectotype of *M. decipiens* the original label clearly reads 1747, which was corrupted to 1749 in copying the label. The specimen at Kew with a letter by Prain attached to the sheet has been chosen as the holotype.

5. The holotype of *M. xylocarpa* has almost glabrous leaflets, only few remaining hairs are visible. As explained in the first note this is what may be expected in rather old leaflets. There are no other differences between this material and the '*pubinervis/dehiscence/decipiens*'-material. All species are here united into one, which has to be called *M. xylocarpa*.

KEY TO THE SPECIES OF MILLETTIA IN MALESIA

- 1a. Leaves 2–11-foliolate 2
- b. Leaves unifoliolate **2. *M. galliflagrans***
- 2a. Lianas, rarely shrubs (*M. solomonensis*). Inflorescences without a pulvinus at the base of the peduncle; 5–10 flowers per brachyblast. Standard without basal callosities. Anthers glabrous, rarely with some hairs at the base (*M. solomonensis*) . 3
- b. Trees, rarely shrubs. Inflorescences with a pulvinus at the base; (1 or) 2 (or 3) flowers per brachyblast. Standard with basal callosities. Anthers hairy 5
- 3a. Leaflets shiny, densely golden or silvery sericeous below. Ovules 3–6. — Sumatra, Peninsular Malaysia, Java 4
- b. Leaflets dull, thinly to densely, brown strigose or hirsute. Ovules 2 (or 3). — Bougainville, Solomon Islands **4. *M. solomonensis***
- 4a. Pedicels 5–9 mm long. Calyx 6–7 mm long. Stamens monodelphous, rarely diadelphous. Pods compressed, c. 14 by 5 by 0.4 cm. Seeds compressed, \pm oblong, c. 24 by 16 by 2 mm **1. *M. chrysamaryssa***
- b. Pedicels c. 4 mm long. Calyx 3–4.5 mm long. Stamens diadelphous. Pods thick, 5–7.5 by 1.5–3.5 by 1–2 cm. Seeds transversely ellipsoid, 25–45 by 10–25 by 4–13 mm **3. *M. sericea***
- 5a. Leaves with 5–11 leaflets, rarely (*M. pinnata*) mixed with trifoliolate ones. Leaflets elliptic to obovate or ovate 6
- b. Leaves with 3 leaflets. Leaflets (broadly) elliptic. — Twigs and leaflets glabrous. Ovules 4 or 5. Moluccas (Halmahera) **9. *M. glabra***
- 6a. Ovules 2, rarely 3. Pods (tardily) dehiscent to indehiscent, valves 0.7–2.7 mm thick, leathery, \pm fibrous to spongy, or woody. Seeds transversely ellipsoid, rather thick, 10–35 by 12–25 by 4–15 mm 7
- b. Ovules 3–8. Pods dehiscent, valves 0.6–0.7 mm thick, woody. Seeds flattened, transversely ellipsoid, oblong, or ‘quadrate’, 10–17 by 7–15 by 1–3 mm 9
- 7a. Terminal leaflets elliptic to obovate, lower surface glabrous to sericeous or hirsute. Blade of standard 7–11 by 7–11 mm. Pods dehiscent or indehiscent, valves leathery or woody. — Inland 8
- b. Terminal leaflets elliptic to broadly ovate, lower surface glabrous, only when young strigose on midrib and veins. Blade of standard 11–16 by 9–13 mm. Pods tardily dehiscent, valves fibrous to spongy. — Coastal, rarely inland ... **7. *M. pinnata***
- 8a. Lower surface of leaflets sericeous, rarely \pm hirsute. Blade of standard 9.5–10 by 10 mm. Pods indehiscent, valves leathery. Seeds 4–8 mm thick. — Peninsular Malaysia, Sumatra, Borneo **5. *M. borneensis***
- b. Lower surface of leaflets glabrous to hirsute or \pm sericeous. Blade of standard 10–11 by 11 mm. Pods dehiscent, valves woody. Seeds 10–15 mm thick. — Philippines **6. *M. brachycarpa***
- 9a. Terminal leaflets elliptic to obovate, 2.5–13 by 1–8 cm, lower surface glabrous or with few appressed hairs to hirsute. Calyx 2.5–4 mm long and blade of standard 7–12 by 6–12 mm (then pedicels 2–10 mm long), or calyx 6–7 mm long and blade of standard 14–16 by 12–17 mm (then pedicels 10–30 mm long) 10
- b. Terminal leaflets obovate, 9.5–18 by 2.5–5 cm, lower surface thinly strigose. Calyx 5–6 mm long. Blade of standard 15–18 by 11–18 mm. Pedicels 8–13 mm long. — Philippines **11. *M. platyphylla***

- 10a. Pedicels 10–30 mm long. Calyx 6–7 mm long. Blade of standard 14–16 by 12–16 mm. Pods 15–21 by 2–3 cm (not known for *M. tenuipes*) 11
- b. Pedicels 2–10 mm long. Calyx 2.5–4 mm long. Blade of standard 7–12 by 6–12 mm. Pods 2–15 by 1–3 cm (for *M. velutina* only young pods are known) . 12
- 11a. Pedicels 10–14 mm long. Blade of standard 14–15 by 12–16 mm. Ovules 4–8 **8. *M. ahernii***
- b. Pedicels 25–30 mm long. Blade of standard c. 16 by 17 mm. Ovules 8 **13. *M. tenuipes***
- 12a. Lower surface of leaflets hirsute, glabrescent. — Peninsular Malaysia, Java, Borneo, Lesser Sunda Islands, Papua New Guinea 13
- b. Lower surface of leaflets glabrous or with few appressed hairs. — Philippines, Lesser Sunda Islands **10. *M. merrillii***
- 13a. Leaves with 5 or 7 leaflets. Lower surface of leaflets hirsute, hairs curly, ± firmly attached. Pedicels 2–4 mm long. Pods 2–6.5 by 1 cm (all rather young). Seeds not known. — Papua New Guinea **14. *M. velutina***
- b. Leaves 7–11-foliolate. Lower surface of leaflets ± hirsute, glabrescent, hairs straight, rather loosely attached (in old leaflets only few hairs along the midrib remain). Pedicels 3.5–7 mm long. Pods 8–14 by 1.5–2.5 cm. Seeds 12–16 by 11–15 by 1–2 mm. — Peninsular Malaysia, Java, Borneo, Lesser Sunda Islands **15. *M. xylocarpa***

DUBIOUS SPECIES

Millettia longipes Perkins, Fragm. Fl. Philipp. (1904) 80; Dunn, J. Linn. Soc. Bot. 41 (1912) 178; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 279. — Syntypes: *Warburg 12094, 12095, 12112*.

Up to now no other material has been found than some fragments at K. These fragments, two leaflets, two flowers and one pod valve, bear no indication to which of the Warburg collections they belong. The fragments are accompanied by three drawings: *Warburg 12095*: a rather complete flowering specimen with a panicle-like inflorescence, quite clearly this specimen does not belong to a *Millettia* species. *Warburg 12112*: on the same sheet as the preceding one, a drawing of three pods, if the valve added to the second sheet really belongs to this specimen, it represents a *Millettia* species, probably *M. merrillii*. On a second sheet a drawing annotated *Warburg 12112* consisting of a pod and a leaflet. The pod may belong to a *Millettia* species; the leaflet probably belongs to *Warburg 12095*. Without having seen any other original material it is impossible to choose a lectotype; it is also impossible to tell to which species the various parts belong.

Millettia stipulata Dunn, Philipp. J. Sci., Bot. 6 (1912) 316; J. Linn. Soc. Bot. 41 (1912) 181; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 280. — Type: *FB 11140 (Aquilar)*, Philippines, Luzon, Angat.

From this species I have seen only some fragments in K accompanied by a drawing of an inflorescence, a leaflet and a part of a twig with stipules. These parts may belong to a *Millettia* species; however, several characters need to be clarified. A complete duplicate of the type is still needed. The fragments seem to indicate differences with most other Philippine species of *Millettia*.

Millettia zollingeri Miq., Fl. Ned. Ind. 1 (1855) 156; Dunn, J. Linn. Soc. Bot. 41 (1912) 239. — Type: *Zollinger?*, Java, Bantam.

The only Zollinger specimen from Java seen by me that belongs to a *Millettia* species is *Zollinger III 3997 17*. This specimen belongs to *M. sericea*.

There are also a number of specimens that cannot be identified with any of the existing species of *Millettia*. However, the material is too scanty to be described as new species.

1. *SAN 55901*, Sabah.

This specimen belongs to sect. *Fragiliflorae* and within that section to the group with 2 ovules (*Pinnata*-group). The thickness of the seeds leads to *M. brachycarpa*. From this and the other species of the *Pinnata*-group it differs in the fruit wall, which has scattered lenticels. In all species of the *Pinnata*-group the lenticels of the fruit wall are (seemingly) absent or confined to the sutures of the fruit.

2. *Native collector 204*, Sarawak; *native collector 689*, Sarawak; *Korthals s.n.*, Kalimantan.

The first specimen has inflorescences with young pods; the second has young pods, the third has very young flower buds. All have leaflets glaucous below; axillary pseudo-panicles; 2 ovules; young pods probably winged.

These specimens probably belong to *Millettia*. The inflorescences differ greatly from those of other *Millettia* species with winged fruits. For now the identity of these specimens is unclear.

3. *Kooy 821*, Lesser Sunda Islands, Timor.

This specimen belongs to one of the species of sect. *Fragiliflorae*. It is rather similar to *M. merrillii* and *M. xylocarpa*. However, it differs from both in the larger flowers; from *M. merrillii* it differs also in the larger leaflets.

As the flower size seems to be a useful character in the *Fragiliflorae*, this specimen may represent a new species.

4. *SF 22586* (*R. Henderson*), Malaysia, Pahang.

The fruits of this specimen are quite different from the fruits of the species of *Millettia* found in Peninsular Malaysia. The pods are rather similar to those of *Callerya cinerea*. The latter species has true panicles as inflorescences. *SF 22586* has a pseudo-panicle. As the specimen is rather incomplete it is hard to identify. In *Millettia* it is similar to *M. pachycarpa*, which has pods with almost glabrous, reticulate valves with many scattered lenticels, whereas *SF 22586* has pods with smooth, densely velutinous valves without visible lenticels. This specimen may represent a new species.

5. *PNH 2591* (*V.R. Marabalal*).

This specimen is in indumentum rather similar to *M. velvetina* of New Guinea. There are no other data available than: Philippines, alt. 75 m, 17.V.1948.

EXCLUDED SPECIES

Millettia atropurpurea (Wall.) Benth., Pl. Jungh. (1852) 249; Miq., Fl. Ned. Ind. 1 (1855) 157. — Type: *Wallich 5910* (K), Amherst. = *Callerya atropurpurea* (Wall.) Schot. See Schot (1994).

Millettia koordersii Backer ex Koord.-Schum., Syst. Verz. 1, 1, 128 (1911) 43. — Type: *Koorders 26430* (L), Java. = *Sophora wightii* Baker. See Backer & Bakhuizen van den Brink (1964).

Millettia litoralis Dunn, Philipp. J. Sci., Bot. 6 (1912) 316; J. Linn. Soc. Bot. 41 (1912) 181; Merr., Enum. Philipp. Flow. Pl. 2 (1923) 279. — Type: *De Vore & Hoover 250* (K), Philippines, Mindanao, St. Cruz.

The Kew duplicate of the type specimen has been identified as: *Derris* cf. *scandens* Benth. The structure of the inflorescences and flowers seem to confirm this identification.

Millettia ? *luzoniensis* A. Gray, Bot. U.S. Expl. Exped. 1 (1854) 456; Merr., Philipp. J. Sci., Bot 3 (1908) 82; Dunn, J. Linn. Soc. Bot. 41 (1912) 239. — Type unknown. = *Gliricidia sepium* (Jacq.) Steud. See Merrill (1908: 82; 1923: 280).

Millettia monticola Kurz, J. As. Soc. Beng. 42, 2 (1873) 67. — Type probably from Montaban. = *Derris monticola* (Kurz) Prain. See Prain, J. As. Soc. Beng. 66, 2 (1897) 361.

Millettia rostrata (Hassk.) Miq., Fl. Ned. Ind. 1 (1855) 155. — *Dalbergia rostrata* Hassk., Flora 2, Beibl. (1842) 53. — Type: *Hasskarl s.n.*, Java (n.v.). = *Dalbergia rostrata* Hassk.

Millettia rufa Backer, Blumea 5 (1945) 511; Backer & Bakh.f., Fl. Java 1 (1964) 596. — Type: *Dorgelo 1770* (L), Java, Kediri, baai van Popoh.

The type and only specimen of this species consists of fragments only: loose petioles, leaflets, inflorescence axes, and flowers. Identification leads to *Derris* spec.

Millettia splendidissima Blume ex Miq., Fl. Ned. Ind. 1 (1855) 156. — Type: *Korthals s.n.* (L), Borneo. = *Fordia splendidissima* (Blume ex Miq.) Buysen. See Buysen (1988).

Millettia thyrsiflora Benth., Pl. Jungh. (1852) 249; Miq., Fl. Ned. Ind. 1 (1855) 156. — Syntypes: *Philips s.n.*, Penang (n.v.); *Griffith s.n.*, Malacca (n.v.). = *Aganope thyrsiflora* (Benth.) Polhill. See Polhill (1971).

Pongamia corallaria Miq., Fl. Ned. Ind. 1 (1855) 149. — [*Corallaria latifolia* seu *Zaga Pohon* Rumph., Herb. Amboin. 3 (1743) 175, t. 110.] — Type: The plate by Rumphius? = *Ormosia calavensis* Azaola ex Blanco. See Merrill (1917).

Pongamia elliptica Wall., Pl. As. Rar. 3 (1832) 20, t. 237. — Type: not indicated. = *Derris elliptica* (Wall.) Benth.

Pongamia grandiflora Vent., Jard. Malm. (1803) sub t. 28, in obs. — Type: *Herb. Jussieu 15666* (P). = **Derris elliptica** (Wall.) Benth. (Geesink in litt.).

Pongamia grandifolia Zoll. & Moritzi in Moritzi, Syst. Verz. (1845) 2; Miq., Fl. Ned. Ind. 1 (1855) 147. — Type: *Zollinger 1245*, Java, Propoli (n.v.). = **Millettia pinnata** (L.) Panigrahi.

Pongamia horsfieldii Miq., Fl. Ned. Ind. 1 (1855) 149. — Type: *Horsfield s.n.*, Java, Patjitan (n.v.). = **Derris elliptica** (Wall.) Benth. See Kew Index.

Pongamia hypoleuca Miq., Fl. Ned. Ind. 1 (1855) 148. — Type: not indicated. = **Derris elliptica** (Wall.) Benth. See Kew Index.

Pongamia paniculata Wight ex Benth., J. Linn. Soc. 4, Suppl. (1860) 110. — Type: not indicated. = **Derris heyneana** Benth. See Kew Index.

Pongamia piscidia Steud., Nom. ed. 2, pt. 2 (1840) 380. — Type: not indicated. = **Millettia piscidia** Wight. See Kew Index.

Pongamia taiwaniana Matsum. ex Hayata, Ic. Pl. Formos. 3 (1913) 79. — Type: not indicated. = **Millettia pachycarpa** Benth. See T.C. Huang & H. Ohashi, Flora of Taiwan, ed. 2, 3 (1993) 337.

Pongamia triphylla Wight in Hook., Bot. Misc. 3 (1833) t. 41. — Type unknown = **Derris trifoliata** Lour. See Kew Index.

Pongamia uliginosa DC., Prod. 2 (1825) 416. — Type: not indicated. = **Derris trifoliata** Lour. See Kew Index.

Pongamia volubilis Zoll. & Moritzi in Moritzi, Syst. Verz. (1845) 3; Miq., Fl. Ned. Ind. 1 (1855) 148. — Type: *Zollinger 325*, Java, Tjidurian (n.v.). = **Derris elliptica** (Wall.) Benth. See Kew Index.

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| 2. <i>M. galliflagrans</i> | 10. <i>M. merrillii</i> |
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| 5. <i>M. borneensis</i> | 13. <i>M. tenuipes</i> |
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| 8. <i>M. ahernii</i> | 16. <i>M. spec.</i> |

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Callerya atropurpurea (Wall.) Schot excl.
Cytisus pinnatus L. 7
Dalbergia angustifolia Hassk. 3
rostrata Hassk. excl.
Derris elliptica (Wall.) Benth. excl.
heyneana Benth. excl.
monticola (Kurz) Prain excl.
trifoliata Lour. excl.
Fordia splendidissima (Blume ex Miq.) Buysen excl.
Galedupa Lam. [p. 404]
Gliricidia sepium (Jacq.) Steud. excl.
Malaparius Rumph. 7
Malaparius e Nussanive Rumph. 7
Millettia Wight & Arn. [p. 403]
sect. *Fragiliflorae* Dunn [p. 404 + 407]
sect. *Macrosperrae* Dunn [p. 404]
sect. *Typicae* Dunn [p. 404]
ahernii Merr. & Rolfe 8
argentea Zipp. ex Miq. 3
atropurpurea (Wall.) Benth. excl.
borneensis Adema 5
brachycarpa Merr. 6
canariifolia Merr. 8
capillipes Dunn 10
cavitensis Merr. 8
chrysamaryssa Adema 1
decipiens Prain 15
dehiscens (Koord. & Valeton) Prain 15
foxworthii Merr. 10
galliflagrans Whitmore 2
glabra Adema 9
glaucescens auct. 12
hemsleyana Prain 15
koordersii Backer ex Koord.-Schum. excl.
litoralis Dunn excl.
longipes Perkins dub.
luzoniensis A. Gray excl.
merrillii Perkins 10
monticola Kurz excl.
novoguineensis Kaneh. & Hatus. 7
pachycarpa Benth. excl.
pinnata (L.) Panigrahi 7, excl.
piscidia Wight excl.
platyphylla Merr. ex Dunn 11
pterocarpa Dunn 12
pubinervis Kurz 15
(*Millettia*)
rostrata (Hassk.) Miq. excl.
rufa Backer excl.
sericea (Vent.) Wight & Arn. ex Hassk. 3
var. *aurata* Miq. 3
var. *major* Miq. 3
var. *malaccensis* Prain 3
var. *obtus* Miq. 3
forma *brachycarpa* Miq. 3
forma *subcordata* Miq. 3
solomonensis Verdc. 4
splendidissima Blume ex Miq. excl.
stipulata Dunn dub.
tenuipes Merr. 13
thyrsiflora Benth. excl.
turgida Miq. 3
velvetina Adema 14
xylocarpa Miq. 15
zollingeri Miq. dub.
Ormosia calavensis Azaola ex Blanco excl.
Pongamia Vent. [p. 404 + 407]
corallaria Miq. excl.
dehiscence Koord. & Valeton 15
elliptica Wall. excl.
glabra Vent. 7
grandiflora Vent. excl.
grandifolia Zoll. & Moritz 7, excl.
horsfieldii Miq. excl.
hypoleuca Miq. excl.
mitis (L.) Kurz 7
mitis (L.) Merr. 7
var. *xerocarpa* (Hassk.) Merr. 7
paniculata Wight ex Benth. excl.
pinnata (L.) Merr. 7
var. *xerocarpa* (Hassk.) Merr. 7
pinnata (L.) Pierre 7
var. *velutina* C.T. White 14
piscidia Steud. excl.
sericea Vent. 3
taiwaniana Matsum. ex Hayata excl.
triphylla Wight excl.
uliginosa DC. excl.
velutina (C.T. White) Verdc. 14
volubilis Zoll. & Moritz excl.
var. *glaucophylla* Miq. excl.
xerocarpa Hassk. 7
Robinia mitis L. 7
Sophora wightii excl.